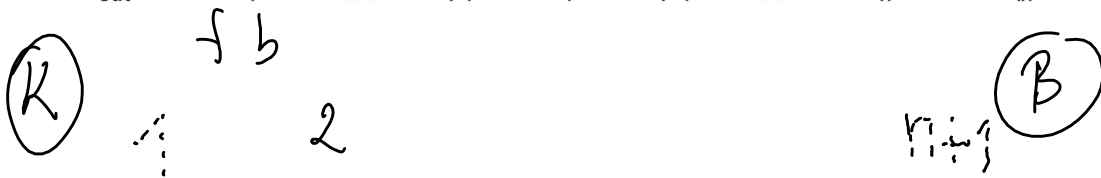
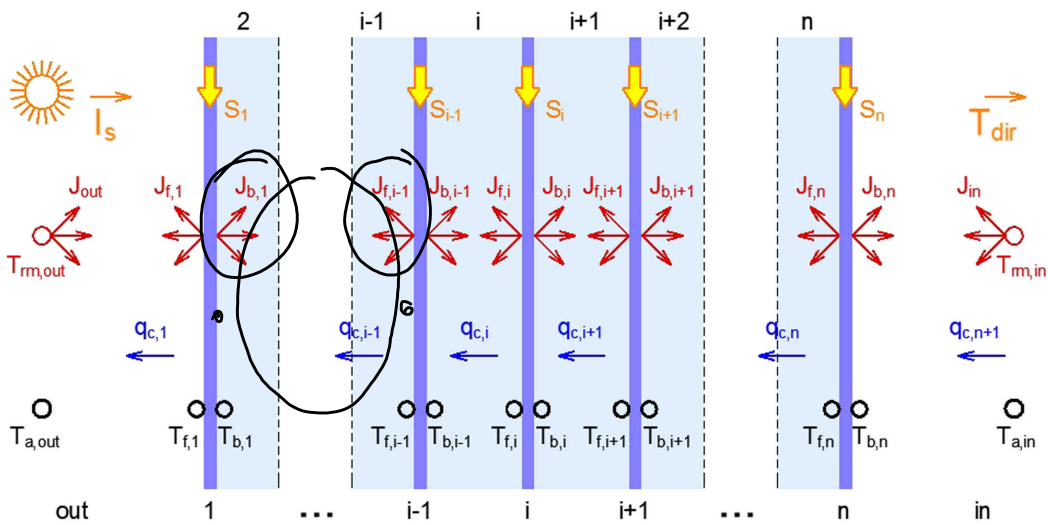


Energiamérleg

2018. november 23.
8:59



sagódmennyiség:
 ↙ i-edik rétegen átáramló hőáram

$$q_i = h_{c,i} [T_{f,i} - T_{b,i-1}] + J_{f,i} - J_{b,i-1}$$

$$q_{i+1} = h_{c,i+1} [T_{f,i+1} - T_{b,i}] + J_{f,i+1} - J_{b,i}$$

① i-edik réteg f oldalának hőárama
 → szelvény sug. egyenlős $\left[\frac{W}{m^2} \right]$

$$q_i = S_i + q_{i+1}$$

② i-edik réteg f oldalának kisugárzott energiája $\tau_i = 1 - \epsilon_{f,i} - \rho_{f,i}$

$$J_{f,i} = \epsilon_{f,i} \cdot \sigma \cdot T_{f,i}^4 + \tau_i J_{f,i+1} - \rho_{f,i} J_{b,i-1}$$

③ i-edik réteg b oldalának kisug. energiája

$$J_{b,i} = \epsilon_{b,i} \cdot \sigma \cdot T_{b,i}^4 + \tau_i J_{b,i+1} - \rho_{b,i} J_{f,i}$$

3.

i -edik réteg w ...

$$J_{b_{ii}} = E_{ii} G \cdot T_{b_{ii}} + \sum_i J_{b_{ii-1}} - \delta_{b_{ii}} J_{f_{ii+1}}$$

4.

i -edik réteg T eloszlásból

$$T_{b_{ii}} - J_{f_{ii}} = \frac{+g_i}{2 \cdot \lambda g_i} [2 \cdot q_{i+1} + \delta_i]$$

$n \times n$ ismeretlen:

$T_{f_{ii}}$	$T_{b_{ii}}$
$\delta_{f_{ii}}$	$\delta_{b_{ii}}$

$n \times n$ egyenlet

NEM lineáris

$$h_{c_{ii}} = h_{c_{ii}} \frac{T_{f_{ii}} - T_{b_{ii-1}}}{E_{b_{f_{ii}}} - E_{b_{b_{ii}}}}$$

$$E_{b_{f_{ii}}} = G \cdot T_{f_{ii}}$$

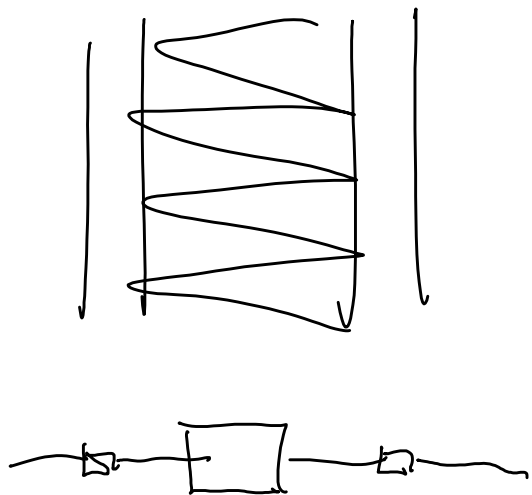
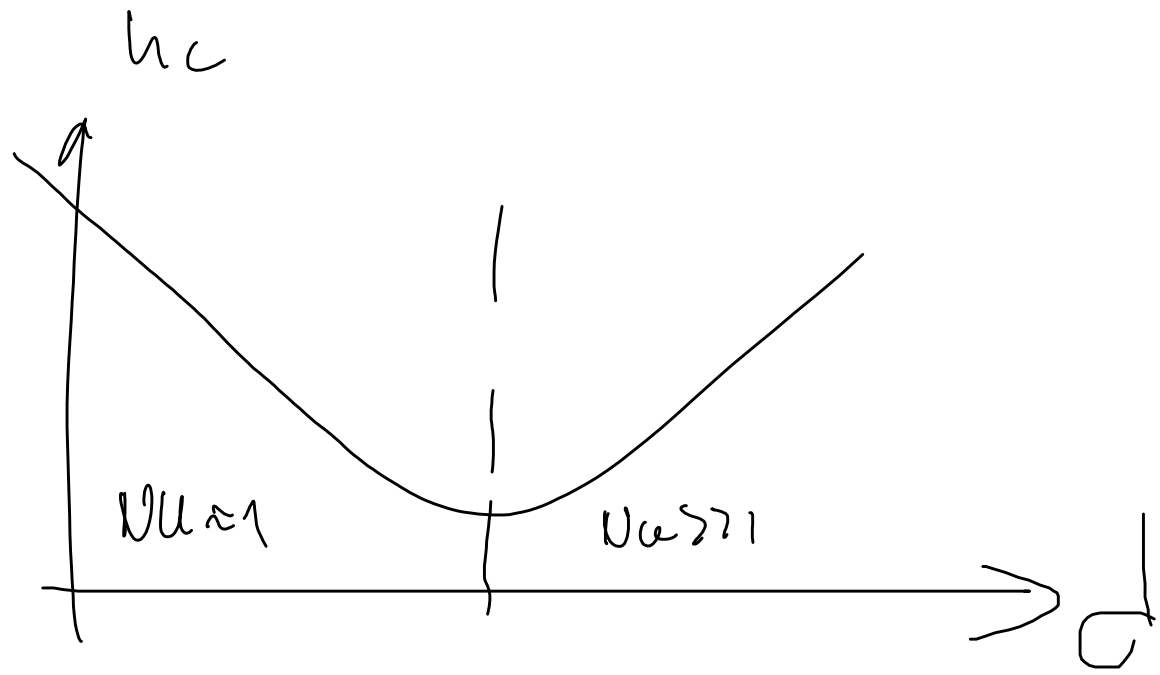
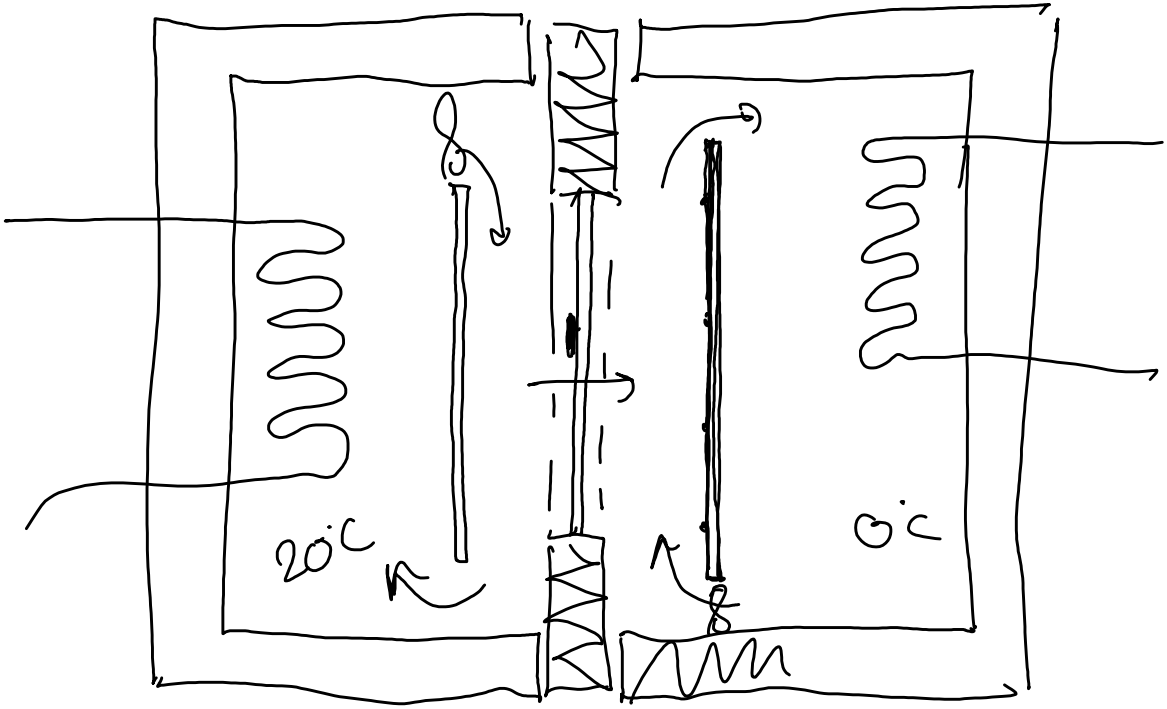
$$E_{b_{b_{ii}}} = G \cdot T_{b_{ii}}$$

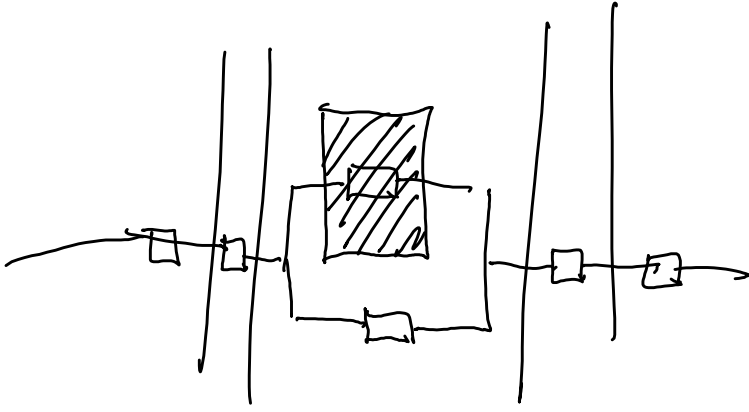
W/m²
hosszkhullámú
elvezetés képesség

\rightarrow

$\delta_{f_{ii}}$	$\delta_{b_{ii}}$
$E_{b_{f}}$	$E_{b_{b}}$

lineáris egyenletrendszer

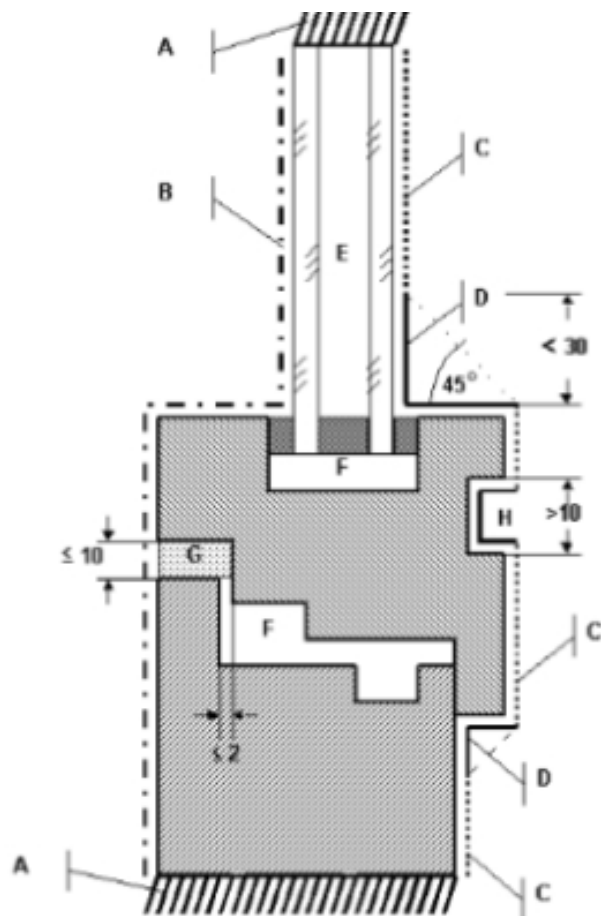




Ablak U érték

2018. november 23.

9:00



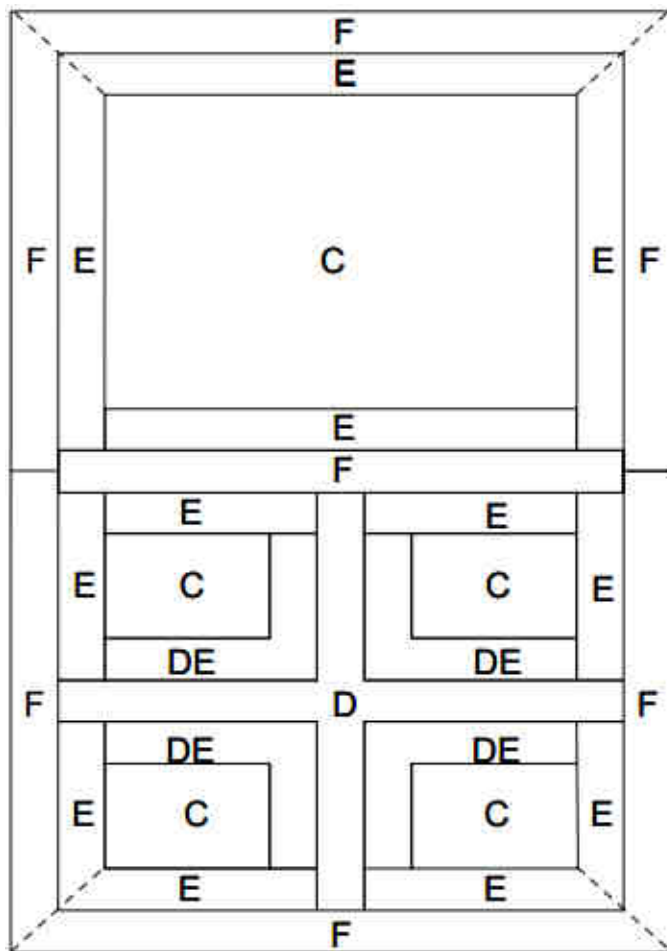
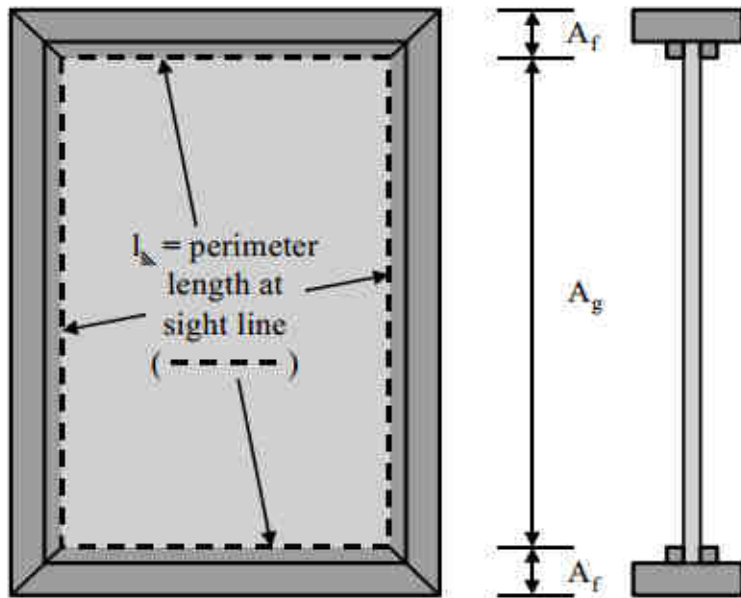
Key

Boundaries (see annex B):

- A Adiabatic boundary
- B External surface resistance
- C Internal surface resistance
- D Increased surface resistance

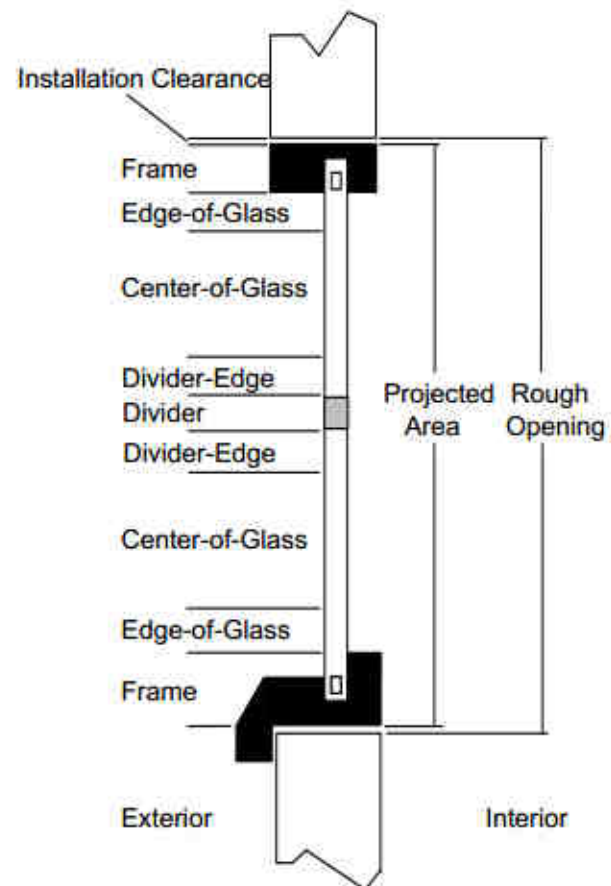
Cavities and grooves:

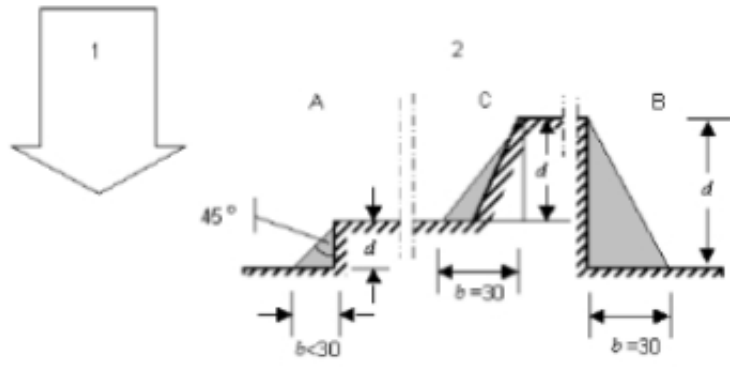
- E Glazing (see 6.2)
- F Unventilated cavity (see 6.3)
- G Slightly ventilated cavity or groove (see 6.4.1)
- H Well ventilated cavity or groove (see 6.4.2)



Legend

- C Center-of-Glass
- E Edge-of-Glass
- F Frame
- D Divider
- DE Divider-Edge



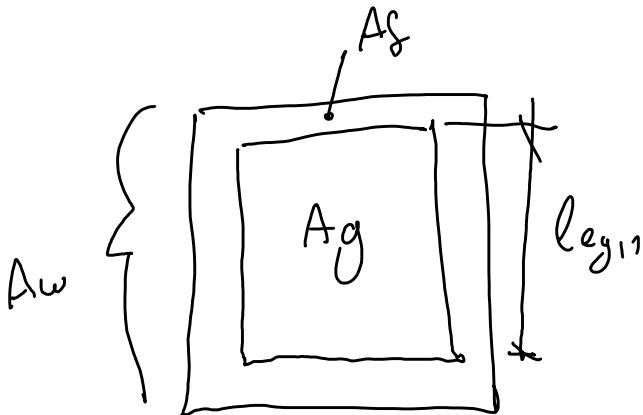


Key

- 1 Direction of heat flow
- 2 Internal surface

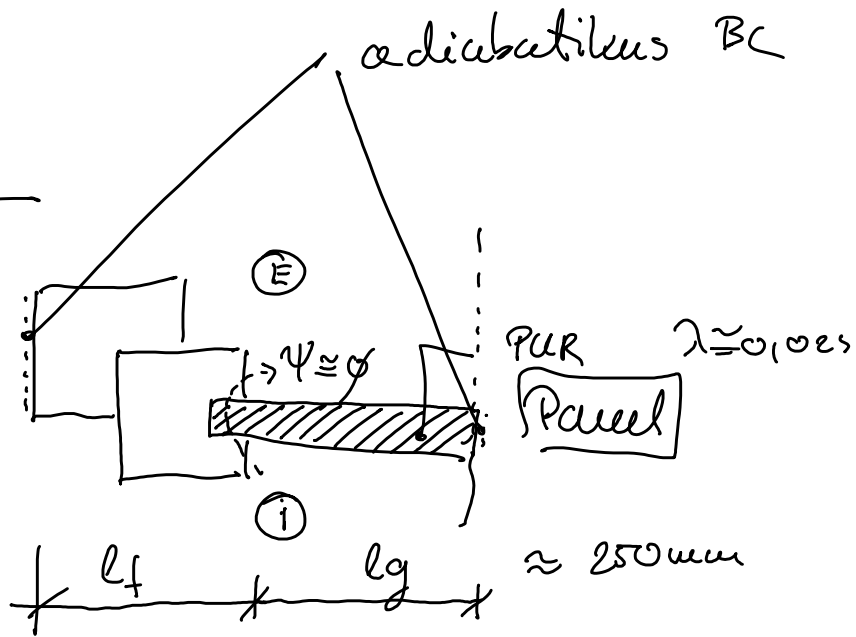
$$U_w = \frac{U_f \cdot A_f + \sum l_{eg} \cdot \psi_{eg} + U_g \cdot A_g}{A_f + A_g}$$

A_w



THERM

1.



$$U_f = \frac{U_{20} - U_{panel} \cdot l_{panel} - \phi}{l_f}$$

MST EU 10077-2

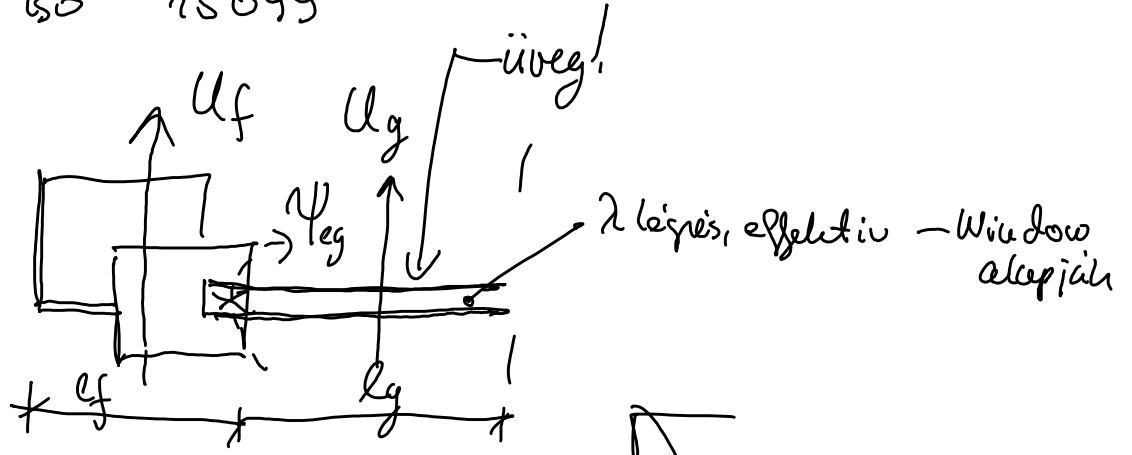
60 15099

...

Műveg!

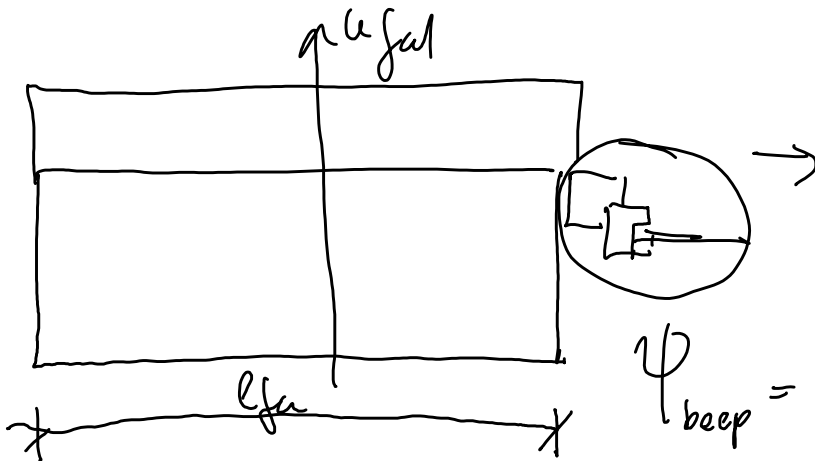
60 15099

2.



$$\psi_{eg} = L_{2D} - U_g \cdot l_g - U_f \cdot l_f$$

ablak beépítési módok



$$\psi_{bcep} = L_{2D, csp} - U_{fal} \cdot l_{fa} - L_{2D, rw}$$